

19 **European Patent Office**11 Disclosure no. **0 528 394 A1**

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**EUROPEAN PATENT APPLICATION**21 Application no.: **92113981.2**51 Int. Class.<sup>5</sup>: **B65D 77/06**22 Application date: **08/17/92**

30 Priority: <b>08/20/91 AT 1630/91</b>  43 Disclosure date for application: <b>02/24/93 Patent Gazette 93/08</b>  84 Contract states named: <b>AT CH DE FR GB IT LI NL</b>	71 Applicant: <b>Haubenwallner, Gerhard, Griesheimer Strasse 12 A-3370 Ybbs a.d. Donau(AT)</b>  72 Inventor: <b>Haubenwallner, Gerhard, Griesheimer Strasse 12 A-3370 Ybbs a.d. Donau(AT)</b>  74 Representative: <b>Haft, Berngruber, Czybulka, Hans-Sachs-Strasse 5 W-8000 Munich 5(DE)</b>
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54 **A packaging system**

57 A packaging system, in which the weight and the volume of the packaging to be disposed of is substantially reduced, consists of a handling section (2) and a replaceable bag or similar of soft packaging (1) that is arranged inside the handling section (2) and contains the filler material. The soft packaging (1) has a ring (10) around an opening (14) and the handling section (2) has a base area (5) and an opening (13). For the soft packaging (1) placed in the handling section (2), the ring (10) is arranged at the opening (14) of the soft packaging at the rim (12) of the opening (13) of the handling section (2). The soft packaging (1) is thus maintained in a fixed position in the handling section (2). The closure used to close the soft packaging (1) arranged in the handling section (2) has a closing section such as a screw cap (16) that, in its closed position, pushes the ring (10) at the opening of the soft packaging (1) against the rim (12) of the opening (13) of the handling section (2), in which case the ring (10) also forms a seal.

The invention concerns a packaging system according to the preamble of claim 1.

Such a packaging system called "Eco-Light-Pack" is already used for the packaging of laundry detergents. In that system, the laundry detergent is filled into a thin-walled and thus soft inside plastic container that is rectangular and is fitted with a screw plug. The inside container is enclosed by a rectangular cardboard collar that is glued to the inside package and forms the handling section.

In such a system, the plastic percentage content is substantially reduced in comparison with a conventional plastic bottle. Furthermore, it is possible to dispose of the carton and inside plastic container separately.

However, the rectangular carton requires a relatively large packaging surface and thus a relatively large packing material quantity. Furthermore, the inside container must still consist of a relatively thick foil, i.e., not necessarily due to its packaging function to hold the filling material, but to support the screw cap of the soft packaging when it is opened and closed. The relatively thick packaging material of the inside container creates not only a correspondingly great weight, but an empty inside container is difficult to compress, i.e., there exists a spring effect that results in a relatively large empty volume.

Furthermore, the carton must be ripped open and the glued inside container must be removed prior to disposal, in which case carton and adhesive residues remain stuck to the inside container, thus making clean reuse practically impossible. Furthermore, the separate disposal of the carton and inside plastic container is associated with extensive logistics and related disadvantages. For example: the user must place the cardboard and inside plastic container in different garbage containers; this leads to further problems and causes convenience-oriented users that are less interested in the environment to forget about the separate disposal.

Packaging regulations become stricter all the time. Paragraph 1 section 2 no. 1 of the German Packaging Regulations of 06/12/1991 states, for example, that the volume and weight of packagings must be limited only to what is required to protect the filled material and to market the product. According to paragraph 6 section 2 of the draft of the Austrian Packaging Regulations, packagings with a filling volume of 100 ml and greater will be subject to a return policy; this does not apply to bags, sacks, foil packaging and miscellaneous packagings used as flat flexible packaging materials and exhibiting a very low specific weight. Accordingly, it is clear that the above-described known Eco-Packaging will also be subject to the return policy.

Also known are so-called "bag-in-a-box" packaging systems that consist of a flexible block-like plastic container that is arranged in a support carton (see FR-PS 2 483 893, US-PS 3 007 608, US-PS 3 117 695 and EP 0 180 137 A2). FR-PS 2 476 606 describes a heat-insulated or similar double-wall bottle, in which the neck of an inside bottle standing in the outside container projects through an opening in the outside container. The inside bottle neck that can be closed with a plug is closed with a screw cap that interacts with a thread of the outside container opening. To make the inside bottle fit into the outside container, the generally cylindrical outside container consists of two sections that can be screwed together. The bottom of the inside bottle must be made of a solid material to provide a support base.

To better handle larger bottles in particular, US-PS 4 379 578 describes the use of a handle that can be attached to the neck and body of the bottle.

The task of the invention consists in the presentation of a packaging system, in which it is basically necessary to dispose of only one packaging of a substantially reduced packaging weight and volume.

In accordance with the invention, this is achieved with the packaging system characterized in claim 1. The sub-claims describe advantageous designs of the invention.

In the packaging system in accordance with the invention, the filling material is contained in a bag or similar soft packaging, i.e., in a packaging made of a light flexible packaging material.

The packaging material may consist of plastic, paper, cardboard, rubber or metal. The packaging may be manufactured with welding, blowing or injection-molding. The plastic material may consist of practically any plastic used today for plastic bottles, such as polyethylene. The filling material can be a liquid, paste or powder.

For that reason, the packaging in accordance with the invention can be flexible and particularly consist of a bag, since the packaging is held or fixed against the opening rim of the handling section by way of the ring at its opening.

In that regard, the bag must just hold the filler material and restrict it with respect to the environment, while the other functions of a packaging, particularly the setting-down, and the handling ability of the filling material when in use are taken over by the handling section in accordance with the invention.

The bag is preferably made of a plastic material, because plastic exhibits a high strength. It is thus possible to make the bag light with thin walls. However, other packaging materials such as metal foil, rubber or cardboard are also possible. With the use of a plastic material, it is possible to reduce the packaging weight to 10 g or less, preferably to 5 g or less, per packaging capacity of 1 liter.

Since the packaging is flexible and light, an empty packaging can be reduced to a correspondingly small volume. In other words, the empty bag collapses when it is removed from the handling section and its empty volume is substantially smaller than that of known light packagings.

Based on the fact that it can be used multiple times, the handling section can be manufactured in a more costly or functional manner without increasing cost per use. It is possible, for example, to fit the handling section with more or less costly metering devices, atomizers and similar devices. Furthermore, the handling section can be made of a more costly material to do justice to the possibility of a multiple use. It may be manufactured of more costly materials, such as glass, ceramics or metal in place of plastic.

When the packaging is full and closed, the filled material will make it generally stable with respect to form, i.e., the package can be labelled, set-down and handled in another manner when full. The stability with respect to form in the filled condition is ensured with the packaging form for a solid and liquid filling material; in the case of a solid filling material, the package can be formed after filling it.

Only after placing it in the handling section and after opening and emptying the soft or inside package does it lose its stability of form and thus the ability to be handled; however, this function is now assumed by the handling section.

In the packaging system in accordance with the invention, the ring of the inside package extends beyond the rim of the opening provided at the handling section. Accordingly, the soft inside package hangs fully from the ring or it rests more or less lightly on the bottom; accordingly, the ring supports just a part of the soft inside package weight when the handling section rests vertically. Due to the support base of the handling section, the handling section with its inside package can be set down in a stable manner.

In a preferred manner, the ring located at the inside package opening also serves as a sealing ring. In that regard, the opening of the handling section can be formed by a neck or similar that is shaped like a sleeve or ring section. When closure is achieved with a screw cap, it is preferred to provide the thread for the screw cap at the neck. In the closed position, the screw cap screwed upon this thread will then push the ring against the rim at the handling section opening and thus additionally seal the inside package toward the outside.

The screwed plug can be replaced with another closure type to push the ring against the rim of the inside package opening to achieve a sealing effect. It is possible to use a bayonet catch, for which one component is formed by the neck of the handling section and the other component by a cap that, in the closed position, pushes the ring at the inside package against the rim of the handling section part. It is also possible to use a plug that has a ring-like expanded section at its top that pushes the ring at the inside package against the edge of the handling section opening.

To fix the inside package to the handling section, the ring can also be connected to the bag by way of a sleeve, in which case the outside diameter of the sleeve is equal to the inside diameter of the neck to achieve a tight fit in the neck. However, fixation can also be achieved with other means, such as a Velcro closer or a (non-hardening) adhesive connection between the ring and/or the sleeve provided at the ring and the opening or the neck of the handling section. Fixation of the inside package is preferably achieved with a sleeve that can be pushed in the opening of the soft package and that subsequently pushes the soft package against the handling section in that area. The fixation sleeve can be fitted with a ring shoulder that pushes the ring at the opening of the soft package against the edge opening of the handling section when the sleeve is inserted.

In a preferred manner, the ring forms one piece with the bag or with a similar flexible soft container of the inside package. Accordingly, the ring can be manufactured to form one piece with the bag or container. However, it can also be welded or glued or attached in another fixed manner to the bag or container.

The ring may be made of the same material as the packaging material for the inside package, e.g., of plastic, rubber, cardboard or metal. However, preference is given to a plastic ring. When the opening or the neck of the handling section has a smaller diameter than the outside diameter of the inside package, the ring used for a one-piece arrangement of ring and packaging must be flexible to be able to squeeze the ring through the opening or neck.

The inside package to be pushed into the handling section is generally closed. This may be achieved, for example, with a plug pushed into the ring; it is preferred, however, to seal the opening of the inside package. The seal may be formed by a small plate that is welded, glued or connected in another manner to the ring. The small plate may consist of a plastic or metal foil or may be made of cardboard. However, the inside package opening can also be sealed by compressing the ring and then closing it by welding, gluing or in another manner.

In any case, the closure of the inside package must be designed such that the inside package is easy to handle and transport in the closed position from the filler station to the end user, i.e., until it is inserted in the handling section.

In a preferred manner, the inside package shall be opened only after its insertion in the handling section, i.e., when its ring projects beyond the rim of the handling section opening.

As mentioned earlier, it must be possible to squeeze the inside package ring through the opening of the handling section. This can be achieved by pulling the ring through the opening or the neck of the handling section. To simplify this process, the opening of the soft or inside

package can be fitted with a pull-in device. This may consist of a strap attached to the ring. In a preferred manner, the pull-in device is designed such that it permits the simultaneous opening of the sealed inside package, i.e., particularly as a tear-off top. When the inside package opening is sealed with a small plate covering the ring to which a strap is fitted as pull-in device, the strap may be used to simultaneously tear-off the small plate and to thus open the inside package. In place of a strap, the pull-in device may be designed in a different manner such as a thread that again serves as a tear-off thread to open the sealed opening of the inside package.

The handling section of the packaging system in accordance with the invention may be designed very differently. The requirements consist only of an opening at the handling section to hold the inside package ring and a flat base support area for the handling section as well as a device to comfortably handle the handling section, such as a handle or similar.

In other words, the handling section does not require a closed periphery, but may be open at the side, the base area may consist of a ring, etc. Accordingly, the handling section must enclose the soft inside package only to the extent this is required to ensure proper handling.

The inside package can be combined with the handling section from the top, from the bottom and laterally.

In a preferred manner, however, the handling section is shaped like a bottle, e.g., a plastic bottle with a handle, such as is commonly used today for various liquid cleaning agents in household applications.

To permit use for the packaging system in accordance with the invention, such a bottle does indeed require only minor modifications. In other words, the bottle must be modified only to permit insertion of the inside package.

This is made possible, for example, through an opening in the bottle by leaving out the bottle floor or by designing the bottle bottom like a cover.

However, the bottle can also be designed in any manner to provide an opening and thus accommodate the insertion of the inside package; it may consist of two or more sections by way of a longitudinally cut design, in which case the two components can be folded out.

Since this requires only minor modifications to existing bottles, such as deletion of the bottom, it is possible to keep all other existing components and devices for the bottle manufacture, particularly for the manufacture of plastic bottles, generally unchanged, including the screw top.

After the inside package has been inserted in the bottle-shaped handling section, it is appropriately sealed in such a tight manner that compressing the lateral sides of the bottle-shaped handling section causes a pressure application on the inside package and thus a pushing-out of its content.

It is only natural that the inside package must be smaller than the bottle-shaped handling section to ensure its insertion in the bottle-shaped section. Leaving that out of consideration, form and size of the inside package and bottle-shaped handling section are preferably and generally made to match. In other words, an inside package designed for a bottle-shaped handling section with an oval cross-section will preferably also exhibit said bottle shape and the same oval cross-section. In a preferred manner, however, form and size of the handling section and inside package are different as a function of the goods for filling such. In other words, a handling section manufactured specifically for a certain material as indicated by its design and labelling must be matched with respect to form and size such that an inside package filled with another material does not fit into the handling section. Doing so ensures that a certain handling

section can accommodate only an inside package filled with a corresponding material. It is thus possible to prevent material confusion.

For that reason and also to prevent opposite rotation of inside package and handling section during opening and closing, the bottle-shaped handling section preferably does not exhibit a cylindrical, but rather an oval or square form.

Design samples will be described in the following in more details and with the help of the drawings. They show the following schematic representation:

Figures 1 through 3 show a longitudinal section through the package of a design sample of the invention indicating the insertion of a soft package in the handling section;

Figure 4 shows a section through a soft package inserted in the handling section in accordance with another design form of the invention;

Figure 5 shows a section through the neck of the handling section fitted with a fixation sleeve;

Figure 6 shows another version of the ring located at the soft package opening;

Figure 7 shows an elevation of the soft package and the open handling section in accordance with another design form of the invention;

Figure 8 shows a view of the bottom of the opened handling section according to Figure 7;

Figure 9 shows an elevation of the closed handling section according to Figures 7 and 8; and

Figure 10 shows a view of the bottom of the closed handling section according to Figure 9.

According to Figures 1 through 3, soft or inside package 1 is inserted into handling section 2. Soft package 1 is formed by a bag and is completely filled with the material. Handling unit 2 is shaped like a bottle, i.e., it consists of neck 3 at the top, a belly section 4 and a bottom section 5. Handle 6 is attached to belly section 4. Opening 7 that covers almost the whole bottom width is arranged such that rim 8 forms an annular base area for handling section 2 around opening 7 at the bottom.

Soft package 1 matches form and size of handling section 2; it is, however, slightly shorter than handling section 2. In other words, soft package 1 itself has neck section 9 and ring 10 runs around its end. Ring 10 may be closed by foil that is not shown in the drawing. A strap or similar is attached to ring 10 and functions as a pull-in device.

Using pull-in device 11, the flexibly constructed ring is pushed through neck 3 of handling section 2 as indicated in Figure 2. Pull-in device 11 is attached laterally to ring 10, thus promoting easier deformation of ring 10 and easier pulling of the ring through neck 3 of handling section 2. When ring 10 has been pulled through neck 3, it rests on rim 12 that runs around opening 13 of neck 3 of handling section 2.

Pull-in device 11 is then removed by tearing it off, for example. The above-mentioned foil of ring 10 is torn-off simultaneously, thus creating opening 14 at soft package 1. Since package 1 is shorter than handling section 2, the package and its ring 10 hang from rim 12 at neck 3 of handling section 2, when handling section 2 stands upright. The soft package may also end flush with rim 8; however, it cannot project above rim 8 at bottom section 5 of handling section 2, since this would cancel the upright-standing stability of handling section 2.

Neck 3 of handling section 2 has outside thread 15 onto which screw cap 16 with inside thread 17 can be screwed to close opening 14 of soft package 1. When screw cap 16 has been screwed onto outside thread 15 and is in its closed position, its bottom section 18 pushes ring 10

against rim 12 at opening 13 of neck 3 of handling section 2 and ring 10 thus also has a sealing effect. Opening 7 in bottom section 5 can be closed with cover 19. The inside volume of handling section 2 is thus closed to the outside. When handling section 2 is then compressed in the area of belly section 4, pressure is applied to soft package 1, thus pushing the filled material out of soft package 1.

According to the design form shown in Figures 1 through 3, soft package 2 is closed with a screw closure consisting of outside thread 15 at neck 3 of handling section 2 and of screw cap 16. However, no thread is provided at neck 9 of soft package 1. This reduces the manufacturing cost of soft package 1 and neck 9 of soft package 1 can be made as flexible as the rest of the bag. In other words, the weight and volume of neck 9 is practically of no significance with respect to disposal.

This advantage does not exist for the design form shown in Figure 4. Outside thread 20 is fitted to neck 9 of soft package 1. Onto outside thread 20 is screwed ring 10 that serves to support soft package 1 at rim 12 of neck 3 of handling section 2, and screw cap 21 is screwed onto the section of outside thread 20 that projects from ring 10.

The design form shown in Figure 5 basically differs from that in Figures 1 through 3 by the fact that the fixation of ring 10, e.g., after opening the screw closure when soft package 1 hangs in handling section 2, is achieved with sleeve 22 that pushes the soft package against neck 3 of handling section 2 in the area of neck 9. Fixation sleeve 22 has an annular expansion section 23 that pushes ring 10 against rim 12 of neck opening 13 when sleeve 22 has been pushed into neck 3 of soft package 1.

In the version shown in Figure 6, ring 10 extends beyond rim 12 at neck 3 of handling section 2. The outside of neck 3 or rim 12 can be fitted with interacting projections and recesses, thus forming stop notch 24 that fixes ring 10. This design form serves particularly soft packages that are suitable for insertion on the basis of their inherent stability. No pull-in device 11 will then be needed.

According to Figures 7 and 8, soft package 1 is introduced into unfolding handling section 2. For that reason, handling section 2 is divided lengthwise down to hinge 25 at belly section 4, including outside thread 15 and bottom section 5. When handling section 2 is formed as a molded plastic part, hinge 21 may consist of a continuous hinge.

After package 1 is inserted in handling section 2, the latter is closed as indicated in Figure 8 by arrow 26. A snap-on cap or a similar closure not shown in the drawing then holds handling section 2 with soft package 1 arranged in it in the closed position indicated in Figures 9 and 10. Figures 8 and 10 also show that handling section 2 and thus also soft package 1 have an oval cross-section in the area of belly and bottom sections 4 and 5.

The handling section and soft package can also have a round, rectangular or prismatic cross-section or another cross-section.

## Patent claims

1. A packaging system with a pouch or similar soft package, a handling section to accommodate the soft package and a closure for the soft package accommodated by the handling section, characterized by the fact that the soft package (1) has an opening (14) and a ring (10) around the opening (14), the handling section (2) has a base support area (5) and an opening (13) and the ring (10) can be placed at the opening of soft package (1) on the rim

- (12) at the opening (13) of the handling section (2) when the soft package (1) has been inserted in the handling section (2).
2. A packaging system in accordance with claim 1, characterized by the fact that the closure unit has a closing section that pushes the ring (10) at the opening (13) of the soft package (1) against the rim (12) at the opening (13) of the handling section (2) when in the closed position.
  3. A packaging system in accordance with claim 1 or 2, characterized by the fact that the ring (10) at the opening (14) of the soft pack (1) forms one piece with the packaging of the soft package (1)
  4. A packaging system in accordance with one of the previous claims, characterized by the fact that a fixation sleeve (22) is provided that can be pushed into the opening (14) of the soft package (1) and that pushes the soft package (1) against the handling section (2) in the area of its opening (14).
  5. A packaging system in accordance with one of the previous claims, characterized by the fact that the opening (14) of the soft package (1) is closed by sealing it.
  6. A packaging system in accordance with one of the previous claims, characterized by the fact that the opening (14) of the soft package (1) is fitted with a pull-in device (11) to pull the ring (10) through the opening (13) of the handling section (2).
  7. A packaging system in accordance with claims 5 and 6, characterized by the fact that the pull-in device (11) is designed to open the sealed opening (14) of the soft package (1).
  8. A packaging system in accordance with one of the previous claims, characterized by the fact that the opening (13) of the handling section (2) is formed by a neck (3).
  9. A packaging system in accordance with claims 2 and 8, characterized by the fact that the closure is achieved with a screw closure or bayonet catch, the neck (3) forms the thread (15) for the screw closure or forms one component of the bayonet catch and the closure component is formed by the cap (16) that interacts with the thread (15) or forms the other component of the bayonet catch.
  10. A packaging system in accordance with one of the previous claims, characterized by the fact that the handling section (2) is shaped like a bottle and can be opened to insert the soft package (1) or is fitted with an opening (7).
  11. A packaging system in accordance with claim (10), characterized by the fact that the opening (7) is located at the bottom (5) of the bottle-shaped handling section (2).



Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Document designation with indication of the relevant passages, where appropriate	Relevant to claim No.	APPLICATION CLASSIFICATION (Int.Class.5)
X	DE-U-9 010 979 (SCHMIDT)	1-3,5	B65D77/06
Y	*Page 4, line 6 - Page 5, line 28; Figures 1,2*	8-11	
A	---	4,6	
Y	NL-A-7 607 982 (VAN LEER) *Page 3, line 12 - line 27; Figures 1,2*	7	
X	US-A-4 984 713 (CHAMBERS) *Column 3, line 37 - Column 4, line 13; Figures 1,2*	4	
X	FR-A-1 287 487 (CANTELOUBE) *Page 2, column 2, line 26 - line 41; Figures 6-8*	1-3,8,9	
Y	FR-A-2 087 296 (FILLEUL) *Page 2, line 1 - line 17; Figures 1-3*	1-3,8-10	
The present search report has been prepared for all patent claims			TECHNICAL FIELDS SEARCHED (Int.Class.5)
			B65D
Place of search		Date of search completion	Examiner
THE HAGUE		NOVEMBER 30, 1992	VANTOMME M.A.
CATEGORY OF CITED DOCUMENTS			
X: Particularly relevant if taken alone.			
Y: Particularly relevant if combined with another document of the same category.			
A: Technological background.			